

ABSTRACT

A circuit where the same amplifiers and the same volume adjustment circuitry are used for the ringer mode as well as for the audio mode of a mobile phone is achieved. The volume adjustment in the audio and ringer mode is provided by a precise amplitude setting via the gain control stages of an inverting voltage amplifier used in a bridge circuit through a current-voltage conversion. This volume adjustment circuit avoids the high power dissipation of a volume control through pulse width modulation (PWM) and avoids the risk of over-and undershooting of the amplifier's output signal due to a high slew rate in combination with the inductance of the loudspeaker. The current-voltage conversion is performed by a series of resistors activated by a series of correspondent switches. High impedance current less sense paths are eliminating the parasitic effect of the resistance of low cost standard switches to adjust the volume of the loudspeaker in the audio and the ringer mode.